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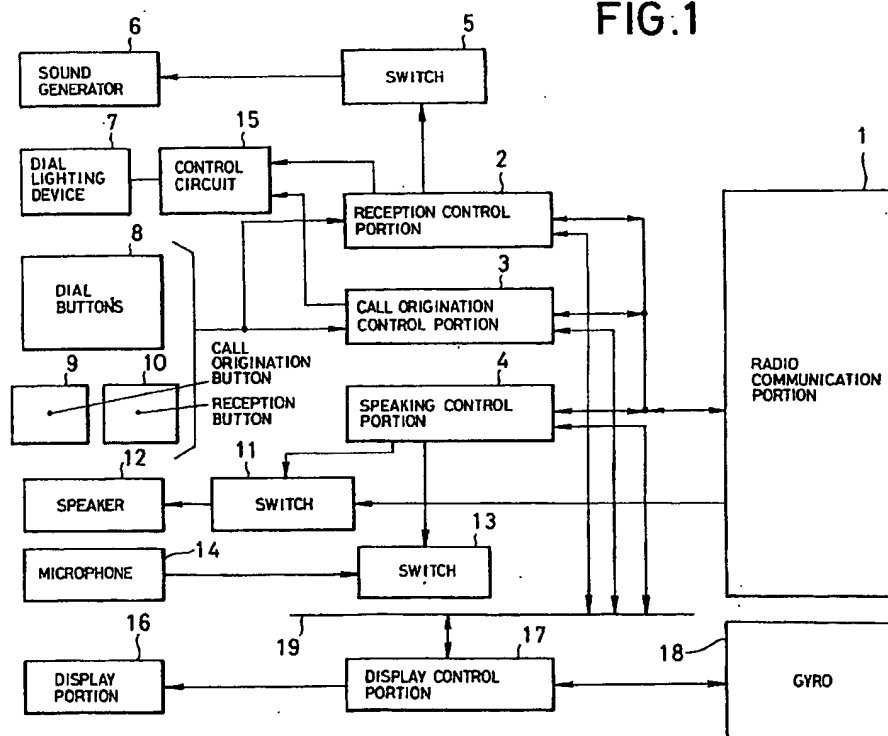
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**(54) Portable telephone set**

(57) For a portable telephone set having a display  
portion for displaying various information associated  
with call origination and reception, a gyro for detecting  
inclination of a main body is provided. When substan-

tially horizontal position of the main body for dialing is  
detected by the gyro, power supply for the display por-  
tion is initiated. On the other hand, when the vertical po-  
sition of the main body for speaking is detected by the  
gyro, power supply for the display portion is shut off.

**FIG.1****EP 1 213 899 A2**

**Description****BACKGROUND OF THE INVENTION****Field of the Invention**

[0001] The present invention relates to a pocket telephone or portable telephone set. More specifically, the invention relates to a portable telephone set which has a display for displaying various information associated with call origination and reception.

**Description of the Related Art**

[0002] The conventional portable telephone set has been designed to display on a number as a content of dialing operation on a display upon call origination. An example of such portable telephone set with a display function is illustrated in Fig. 4.

[0003] In such portable telephone, the number is input by operating dial buttons 8, and then a call origination button is depressed 9. By these operations, call is performed by a call control portion 3 and a radio communication portion 1. At this time, when a remote terminal answers, a speaking control portion 4 turns switches 11 and 13 to enable conversation with a destined person via a speaker 12 and a microphone 14.

[0004] On the other hand, when call is received from the remote terminal, a reception control portion 2 turns a switch 5. Then, a sound generator 6 becomes active to generate a ring sound. When a reception button 10 is depressed after ring sound is generated, the speaking control portion 4 turns switches 11 and 13 so as to enable speaking with the caller.

[0005] In the above-mentioned portable telephone set, by controlling a dial lighting device 7 for lighting the dial buttons 8 by a control circuit 16, The dial lighting device 7 is maintains illumination of the dial button from reception of the call at the remote terminal, to a response to the call.

[0006] By this, even when the portable telephone set is placed in the dark, for example when call is received in the bed, the portable telephone set can be easily located since the dial lighting device 7 lights the dial buttons 8. Such technology has been disclosed in Japanese Unexamined Patent Publication No. 63-248258.

[0007] In the above-mentioned portable telephone set, while the dial lighting device is designed to turn ON and OFF the lighting of the dial buttons depending upon call origination and reception, it does not control ON and OFF of display on the display portion.

[0008] Accordingly, a power is constantly supplied to the display portion which is rarely checked the content during speaking. Therefore, while the content of the display on the display screen will not be seen during speaking, display is performed to consume corresponding amount of power to correspondingly exhaust a battery.

**SUMMARY OF THE INVENTION**

[0009] The present invention is worked out for solving the problem set forth above. It is therefore an object of the present invention to provide a portable telephone set which can shut off power supply for a display portion while a content of a display will not be seen during speaking and thus can reduce power consumption.

[0010] According to one aspect of the invention, a portable telephone set comprises:

display means for displaying information associated with a call;

detecting means for detecting a main body, in which the display means is built-in; and

control means for controlling power supply for the display means depending upon result of detection of the detecting means.

[0011] In the preferred construction the detecting means is a gyro. The control means may shut off power supply for the display means when the detecting means detects the main body at substantially vertical position. On the other hand, the control means may initiate power supply for the display means when the detecting means detects the main body at substantially horizontal position.

[0012] According to another aspect of the invention, a portable telephone set comprising:

call origination control means responsive to a dialing operation for controlling call origination;

reception control means responsive to reception of call for controlling reception;

display means for displaying information associated with call origination and reception;

a main body housing the call origination control means, the reception control means and the display means;

detecting means for detecting inclination of the main body; and

control means for controlling power supply for the display means, the control means being responsive to the detecting means detecting substantially horizontal position of the main body for initiating power supply for the display means.

[0013] The control means may be responsive to the detecting means detecting substantially vertical position for speaking after dialing operation, for shutting off power supply for the display means.

[0014] According to a further aspect of the invention, a portable telephone set comprising:

a call origination controller responsive to a dialing operation for controlling call origination;

a reception controller responsive to reception of call for controlling reception;

a display unit for displaying information associated with call origination and reception;  
 a main body housing the call origination control means, the reception control means and the display means, the main body having operation button array for dialing operation, call origination and reception;  
 an inclination detector incorporated in the main body for detecting the main body at a predetermined range of inclination magnitude in speaking condition; and  
 a display controller for controlling power supply for the display unit, the control means being responsive to the inclination detector detecting the main body within the predetermined range of inclination magnitude for shutting down power supply.

[0015] The display controller may be responsive to the inclination detector detecting the inclination magnitude of the main body out of the predetermined range for initiating power supply when at least one of buttons in the operation button array is operated.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The present invention will be understood more fully from the detailed description given herebelow and from the accompanying drawings of the preferred embodiment of the invention, which, however, should not be taken to be limitative to the present invention, but are for explanation and understanding only.

[0017] In the drawings:

Fig. 1 is a block diagram of one embodiment of a portable telephone set according to the present invention;

Fig. 2 is an illustration showing inclination of a main body during dialing operation in one embodiment of the portable telephone set according to the invention;

Fig. 3 is an illustration showing inclination of a main body during speaking in one embodiment of the portable telephone set according to the invention; and

Fig. 4 is a block diagram showing the construction of the conventional portable telephone set.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

[0018] The preferred embodiment of a portable telephone set according to the present invention will be discussed with reference to the accompanying drawings, particularly to Figs. 1 to 3. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be obvious, however, to those skilled in the art that the present invention may be practiced without these specific details. In other instance, well-known structures

are not shown in detail in order to unnecessarily obscure the present invention.

[0019] Fig. 1 is a block diagram showing a construction of one embodiment of the portable telephone set according to the present invention. In Fig. 1, one embodiment of the portable telephone set according to the invention has substantially the same construction except for a display portion 16, a display control portion 17 and a gyro 18 as additional components. In the following discussion, the like reference numerals to Fig. 4 show like elements. It should be noted that the preferred embodiment of the present invention discussed hereinafter should be applicable even for the portable telephone set which does not have the dial lighting device 7 and the control circuit 15.

[0020] The display control portion 17 is connected to a reception control portion 2, a call origination control portion 3 and a speaking control portion 4, respectively; via a common path 19. Control information associated with speaking is displayed on the display portion 16. On the other hand, the display control portion 17 also controls power supply for the display portion 16.

[0021] The gyro 18 detects an inclination of a main body of the portable telephone set to provide information concerning an inclination angle to the display control portion 17. The display control portion 17 receives the inclination angle information from the gyro 18. The display control portion 17 is responsive to the inclination angle information indicative of substantially horizontal orientation of the main body and to one of a reception control command from the reception control portion 2 and a call origination control command from the call origination control portion 3, to control a power source to supply a power to the display portion 16.

[0022] In contrast, the display control portion 17 is responsive to the inclination angle information indicative of variation of the inclination angle from the substantially horizontal orientation to the substantially vertical orientation while it performs display control for the display portion 16 to display the control information; to terminate power supply for the display portion 16.

[0023] When speaking is performed with the destined person via the speaker 12 and the microphone 14, it is rare to cause necessity to see the display content on the display portion 16. Therefore, the power supply for the display portion 16 is shut down. Thus, exhausting of a battery can be reduced.

[0024] Fig. 2 is an illustration showing inclination of the main body during dialing operation in dialing for the one embodiment of portable telephone set according to the invention, and Fig. 3 is an illustration showing inclination of the main body during speaking with in dialing for the one embodiment of portable telephone set according to the invention.

[0025] In Fig. 2, when the dial buttons 8 of the portable telephone set is to be operated, the main body 20 should be held in substantially horizontal orientation with direct-dial buttons 8 and the display portion 16 upwardly.

[0026] At this condition, when dial buttons 8, call origination button 9 and reception button 10 are selectively depressed, connection to the remote terminal is established for enabling speaking. During speaking, the main body 20 is held in substantially vertical orientation. The orientations of the main body 20 as illustrated in Figs. 2 and 3, are detected by the gyro 18 and the inclination angle information is input to the display control portion 17, as set forth above.

[0027] Therefore, as set forth above, the display control portion 17 performs the power supply control so that the power is supplied to the display portion 16 when the main body is placed at the substantially horizontal orientation as detected by the gyro 18. On the other hand, when the gyro 18 detects the fact that the main body is placed at substantially vertical orientation, the display control portion 17 shut down power supply for the display portion 16.

[0028] Thus, according to the shown embodiment, when the inclination angle information indicative that the main body is in substantially horizontal orientation and when the reception control command from the reception control portion 2 and the call origination control command from the call origination control portion 3, the display control portion 17 starts supply of the power. After starting speaking, when the inclination angle information indicative of variation of orientation of the main body from the horizontal position to the vertical position, the display control portion shut off power supply for the display portion 16. Therefore, in the state of the portable telephone set, in which the display portion 16 will not be seen the display content, no power will be supplied to the display portion 16. Therefore, power consumption can be reduced. As well it should serve for reducing exhausting magnitude of the battery.

[0029] It should be appreciated that the wording "substantially horizontal orientation" as defined throughout the disclosure represents the position of the main body where the dial button array, call origination button, reception button and display portion face to the user's face and not necessarily exactly horizontal but over relatively wider range of orientation; and the wording "substantially vertical orientation" as defined throughout the disclosure represent the position of the main body where the dial button array, call origination button, reception button and display portion are placed substantially perpendicularly to the plane facing with the user's face and not necessarily exactly vertical but over relatively wide range but the position where the speaker is placed in opposition to the user's ear and the microphone is placed in the vicinity of the user's mouth. Although the invention has been illustrated and described with respect to exemplary embodiment thereof, it should be understood by those skilled in the art that the foregoing and various other changes, omissions and additions may be made therein and thereto, without departing from the spirit and scope of the present invention. Therefore, the Present invention should not be understood as

limited to the specific embodiment set out above but to include all possible embodiments which can be embodied within a scope encompassed and equivalents thereof with respect to the feature set out in the appended claims.

## Claims

1. A portable telephone set comprising:

call origination control means responsive to a dialing operation for controlling call origination; reception control means responsive to reception of call for controlling reception; display means for displaying information associated with call origination and reception; a main body housing said call origination control means, said reception control means and said display means; detecting means for detecting inclination of said main body; and control means for controlling power supply for said display means, said control means being responsive to said detecting means detecting substantially horizontal position of said main body for initiating power supply for said display means.

2. A portable telephone set as set forth in claim 1, wherein said control means is responsive to said detecting means detecting substantially vertical position for speaking after dialing operation, for shutting off power supply for said display means.

3. A portable telephone set as set forth in claim 1, wherein said detecting means is a gyro.

FIG. 1

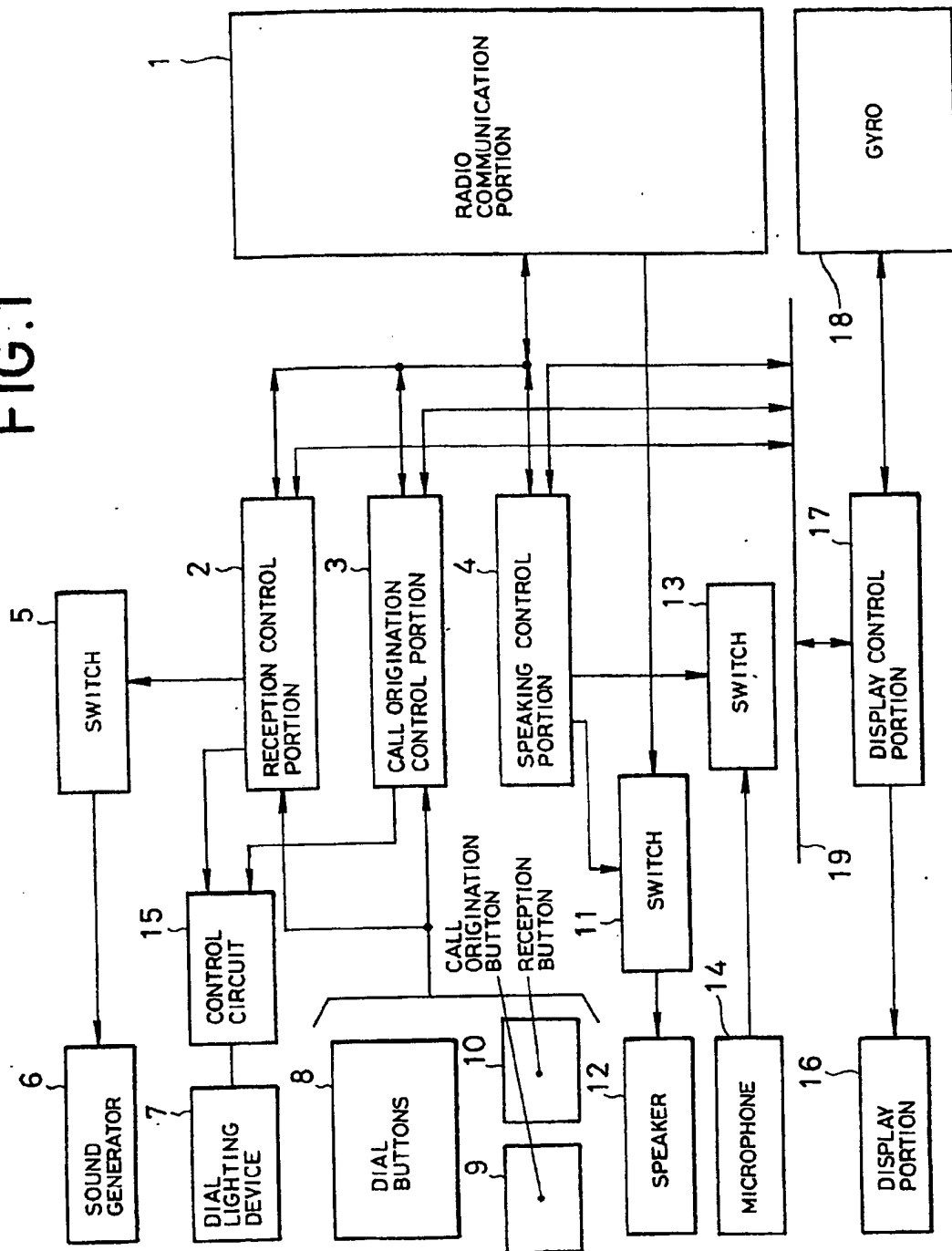


FIG. 2

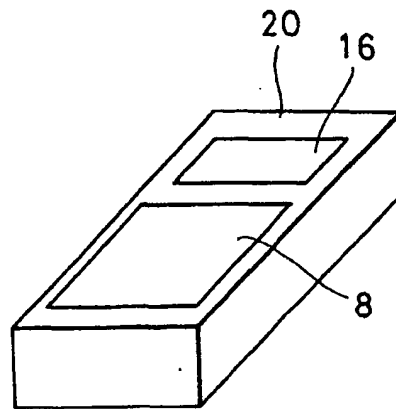
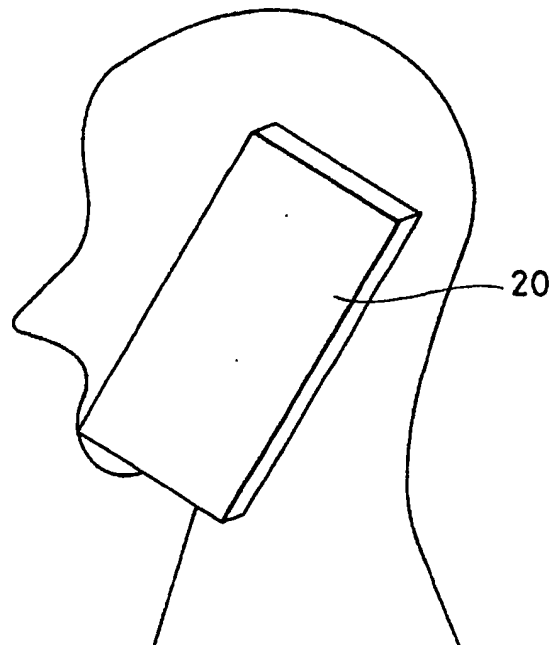


FIG. 3



**FIG. 4**  
(PRIOR ART)

